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the minimum coding gain becomes flat. Therefore, a phase value preferable in the first embodiment of the invention is 45°. FIG. 6 illustrates a QPSK constellation which is phase-rotated by 45°. As illustrated, the phase-rotated symbols are situated on a real axis or an imaginary axis. According to the first embodiment of the invention, a preferable phase rotation range is between 21° and 69° centering on 45° for QPSK, between 21° and 24° for 8PSK, and is 11.25° for 16PSK~~, centering on 45°~~. However, the invention is not restricted to the figures, and the preferable phase rotation range shall be set according to characteristics of the system.---

Please replace the second full paragraph on page 16, beginning at line 16, with the following:

---If a metric value is calculated with channel gains h_1, h_2 and h_3 from 3 transmission antennas to a reception antenna for Equation (14), it becomes

$$|r_1-h_1e^{-j\theta_1}s_1-h_2e^{-j\theta_2}s_2-h_3s_3|^2+|r_2-h_1s_3-h_2e^{-j\theta_1}s_1-h_3e^{-j\theta_2}s_2|^2$$
$$+|r_3-h_1e^{-j\theta_2}s_2-h_2s_3-h_3e^{-j\theta_1}s_1|^2$$

$$|r_1-h_1e^{-j\theta_1}s_1-h_2e^{-j\theta_2}s_2-h_3s_3|^2+|r_2-h_1s_3-h_2e^{-j\theta_1}s_1-h_3e^{-j\theta_2}s_2|^2$$
$$\underline{+|r_3-h_1e^{-j\theta_2}s_2-h_2s_3-h_3e^{-j\theta_1}s_1|^2} \quad \ldots(15)$$

A receiver then determines symbols s_1 to s_3 that minimize Equation (15). ---

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Please replace the first paragraph on page 17, beginning at line ~~1~~ 4, with the following:

--- FIG. 8 is a block diagram illustrating a structure of a transmitter using a space-time block code according to a second embodiment of the present invention. As illustrated, the ~~receiver~~

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$$\begin{pmatrix} e^{j\theta_1}s_1 & s_2 & e^{j\theta_4}s_4 \\ -s_2^* & e^{-j\theta_1}s_1^* & s_3^* \\ -e^{-j\theta_4}s_4^* & -s_3^* & e^{-j\theta_1}s_1^* \\ s_3 & -e^{j\theta_4}s_4 & s_2 \end{pmatrix} \quad \ldots\ldots(11)$$

Equation (11) shows an encoding matrix for phase-rotating s_1 and s_4 among input symbols s_1, s_2, s_3 and s_4 of Equation (7) by θ_1 and θ_2, respectively. In another case, it is possible to rotate a symbol pair of (s_1,s_2), (s_3,s_4) or (s_2,s_3) related to different matrixes. Although phase values by which the 2 symbols are rotated respectively are different from or identical to each other, a diversity order is always maintained at 3. Likewise, if 2 symbols that determine different metric values are phase-rotated by a predetermined phase value even for the other encoding matrixes of Equation (8), final encoding matrixes can be obtained. ---

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Please replace the third full paragraph on page 12, beginning at line ~~21~~ 14, with the following:

--- For example, when s_1 and s_4 among 4 input symbols s_1, s_2, s_3 and s_4 are phase-rotated by θ_1 and θ_2, respectively, an output of the encoder 230 can be expressed in a 4×3 encoding matrix of Equation (11) above. When the encoding matrix of Equation (11) is used, 3 symbols $e^{j\theta_1}s_1$, s_2 and $e^{j\theta_4}s_4$ in a first row are delivered to the 3 antennas 240, 242 and 244, respectively, in a first time interval and symbols s_3, $\cancel{e^{j\theta_4}s_4}$ $\underline{e^{j\theta_4}s_4}$ and s_2 in the last 4th row are delivered to the 3 antennas 240, 242 and 244, respectively, in the last 4th time interval.---

Please replace the third full paragraph on page 14, beginning at line 18, with the following:

---It can be understood from the result of FIG. 5 that when all phase values exist at around 45°,